

What is claimed is:

1. A splint system adapted for generating traction on a leg of a patient, said system comprising:

5 a telescoping splint having a distal end and a proximal end;

10 a distal limb support member disposed on the distal end of the telescoping splint, said distal limb support member being adapted to accommodate a foot of the patient, limit proximal motion of the foot relative to the telescoping splint, and impart caudally directed force on the top of the foot;

15 a proximal limb support member disposed on the proximal end of the telescoping splint, said proximal limb support member being adapted to fix the axial support member to the leg of the patient proximal position on the leg;

means for securing the telescoping splint in a telescoped length to apply traction to the leg of the patient; and

20 wherein the axial support member is fabricated to allow for the acquisition of X-rays or magnetic resonance images while the apparatus is attached to the limb and providing tension on the limb.

2. The apparatus of Claim 1 wherein said axial support member is radiolucent.

25 3. The apparatus of Claim 1 wherein said axial support member, said distal support member, said proximal support member are fabricated from non-magnetic materials.

4. The apparatus of Claim 1 wherein said apparatus further comprises measurement apparatus to determine the amount of traction force being generated in the telescoping splint.

5. The apparatus of Claim 1 wherein said telescoping splint is selectively collapsible or expandable wherein the telescoping splint collapses to 50% or less of its fully expanded length.

6. The apparatus of Claim 1 wherein said telescoping splint comprises telescoping hollow structures that are selectively lockable and unlockable at a plurality of pre-determined lengths.

7. The apparatus of Claim 1 further comprising at least one intermediate support and stabilization member.

8. A method of generating traction on a damaged limb of a patient that involves the steps of:

expanding a telescoping splint of a traction generating device;

locking the telescoping splint of the traction generating device at a desired length;

20 affixing a proximal support member to a limb region closer to the body relative to the damaged region of said limb;

25 affixing a distal support member to a limb region further from the body relative to the damaged region of said limb; and

applying tension on said damaged limb by generating compressive forces within said telescoping splint; and

imaging the damaged limb while said traction generating device is still operably attached to the damaged limb of said patient.

9. The method of Claim 8 wherein said imaging comprises
5 acquisition of X-ray or fluoroscopic images or analysis.

10. The method of Claim 8 wherein said imaging comprise acquisition of magnetic resonance images or analysis.

11. The method of Claim 8 further comprising the step of measuring the amount of said compressive forces in said axial
10 support member.

12. An apparatus adapted for generating traction on a limb having a bone fracture, said apparatus comprising:

a backboard adapted to accommodate a patient and support a patient under a substantial portion of the patient's
15 body and a substantial portion of the patient's limb;

a distal limb support member, said distal limb support member adapted to secure the limb at a point distal to the bone fracture, said distal support member being distally movable relative to the backboard;

20 means for fixing the distal support member in relation to the backboard and the limb;

proximal support means for securing the patient to the backboard at a point superior to the bone fracture.

13. The apparatus of claim 12 the distal support member is
25 adapted to secure the patient's foot in fixed relation to the backboard, and the proximal support means is adapted to secure the patient's chest or abdomen to the backboard.

14. The apparatus of claim 12 wherein the distal support member is adapted to secure the patient's foot in fixed relation to the backboard, and the proximal support means is adapted to secure the patient's thigh to the backboard.

5 15. The apparatus of claim 12 wherein all components are fabricated from non-magnetic materials.

16. The apparatus of claim 12 wherein all components are fabricated from radiolucent materials.

10 17. The apparatus of claim 12 wherein the means for fixing the distal support member in relation to the backboard and the limb comprising a telescoping splint and means for fixing the telescoping splint to the backboard.

15 18. The apparatus of claim 12 wherein the means for fixing the distal support member in relation to the backboard and the limb comprising a telescoping splint and means for releasably attaching the telescoping splint to the backboard.

19. The apparatus of claim 19 wherein the telescoping splint further comprises a controllable, lockable, articulating joint.

20 20. The apparatus of claim 18 wherein the axial support member further comprises an adjustable standoff to support the limb in the proper position.

25 21. The apparatus of Claim 12 wherein the proximal support mechanism comprises a friction pad affixed to a backboard and a strap to hold the torso and pelvis against the friction pad.